



Sequence Listing

<110> Sidhu, Sachdev S.
Weiss, Gregory A.
Wells, James A.

<120> TRANSFORMATION EFFICIENCY IN PHAGE DISPLAY THROUGH MODIFICATION OF A
COAT PROTEIN

<130> 146392004400

<140> US 09/380,447
<141> 1999-09-01

<150> US 60/134,870
<151> 1999-05-19

<150> US 60/133,296
<151> 1999-05-10

<150> US 60/103,514
<151> 1998-10-08

<150> US 60/094,291
<151> 1998-07-27

<150> PCT/US99/16596
<151> 1999-07-22

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5

10

15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

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Glu Thr Ala Ser Ala Gln Leu Ser Asn Phe Ala Ala Lys Ala Pro			
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Asp Asp Gly Glu Ala			
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Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val			
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Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe			
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Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe			
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Thr Ser Lys Ala Ser			
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				20					25					30

Val	Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe
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				20					25					30

Val	Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe
				35					40					45

Ala	Ser	Lys	Ala	Ser
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Asp	Asp	Ala	Thr	Ser	Gln	Ala	Lys	Ala	Ala	Phe	Asp	Ser	Leu	Thr
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				20					25					30

Leu	Val	Val	Gly	Ala	Thr	Val	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe
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Val	Ser	Arg	Ala	Ser
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Thr	Gln	Ala	Thr	Asp	Leu	Ile	Asp	Gln	Thr	Trp	Pro	Val	Val	Thr
				20				25					30	

Ser	Val	Ala	Val	Ala	Gly	Leu	Ala	Ile	Arg	Leu	Phe	Lys	Lys	Phe
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Ser	Ser	Lys	Ala	Val
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Thr	Gln	Ala	Ile	Asp	Leu	Ile	Ser	Gln	Thr	Trp	Pro	Val	Val	Thr
				20				25					30	

Thr	Val	Val	Val	Ala	Gly	Leu	Val	Ile	Arg	Leu	Phe	Lys	Lys	Phe
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Ser	Ser	Lys	Ala	Val
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Ser	Val	Asp	Val	Asp	Asn	Asn	Trp	Ile	Trp	Ala	Val	Gly	Ile	Ile
				20					25					30
Tyr	Met	Leu	Leu	Val	Glu	Ala	Ser	Pro	Trp	Ala	Ala	Lys	Ala	Pro
				35					40					45
Asp	Asp	Gly	Glu	Ala										
				50										

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 gaggtctcttg aggattcagc tactaactat atc 33

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 gaggatattg ctactgaata tatcggttat gcg 33

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 <211> 5
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 Gly Gly Arg Pro Val
 1 5
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<210> 83
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ccatcaccat 60

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taaggcgcca 60

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ccatcaccat caccatgcg 69

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 tgttgat 57

<210> 102
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<223> where n is A, G, C, or T

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50

ttggatttgg gctgtcgg

69

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<211> 69

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 sgcggctgat gcattccca 69

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      tgctaaggcg ccagacgatg gt      72

<210> 105
<211> 69
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 sgcggctgat gcattccca 69

<210> 106
 <211> 81

<212> DNA
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 <220>
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 cvvcvvcvvc gatgcattcc caactatacc a 81

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<210> 109
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<210> 110
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<220>
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<400> 110
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 1 5 10

<210> 111
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<400> 111
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<210> 112
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<400> 112
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 <400> 118
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 <210> 119
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 <220>
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 accatcacca tcaccatgcg 120

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 20 25 30

 Ala Ala Ala His His His His His His Ala
 35 40

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<400> 121
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1 5 10 15
Ser Ala Gln Leu Ser Asn Phe Ala Ala Lys Ala Pro Asp Asp Gly
20 25 30
Glu Ala Ala Ala His His His His His His Ala
35 40

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<220>
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<400> 122
gctgcggctg atgcatctgg tagcgtctag agccaccatc accatcacca 50
t 51

<210> 123
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Ser Val Asp Val Asp Asn Asn Trp Ile Trp Ala Val Gly Ile Ile
20 25 30
Glu Thr Ala Ser Ala Gln Leu Ser Asn Phe Ala Ala Lys Ala Pro
35 40 45
Asp Asp Gly Glu Ala Ala Ala Asp Ala
50

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 <223> where Xaa is Asn, Thr, Ser or Ala
 <220>
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 <223> where Xaa is Ile, Leu, Val or Met
 <220>
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 <222> 29
 <223> where Xaa is Lys, Arg, Phe, Trp, His, Tyr or Val
 <220>
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 <222> 30
 <223> where Xaa is Ile, Val or Leu
 <400> 294
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val Ile
 20 25 30
 Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys
 35 40 45
 Ala Ser
 50

<210> 295
 <211> 50
 <212> PRT
 <213> M13 phage

 <220>
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 <223> where Xaa is any amino acid except Ala

 <400> 295
 Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Ala Phe Asn Ser Leu Gln Ala
 1 5 10 15
 Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile
 20 25 30
 Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys
 35 40 45

Ala Ser
50

<210> 296

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<400> 296

Ala	Glu	Gly	Asp	Asp	Pro	Ala	Lys	Ala	Ala	Xaa	Xaa	Xaa	Leu	Xaa	Xaa
1				5				10					15		
Xaa	Ala	Thr	Xaa	Tyr	Ile	Gly	Tyr	Ala	Trp	Ala	Met	Val	Val	Val	Ile
		20					25					30			
Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe	Thr	Ser	Lys
		35					40					45			

Ala Ser
50

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 <223> where Xaa is any amino acid except Met

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 <223> where Xaa is any amino acid except Val

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<223> where Xaa is any amino acid except Val

<400> 297

Ala	Glu	Gly	Asp	Asp	Pro	Ala	Lys	Ala	Ala	Phe	Asn	Ser	Leu	Gln	Ala
1			5					10					15		
Ser	Ala	Thr	Glu	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Val	Ile
		20					25						30		
Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe	Thr	Ser	Lys
		35				40						45			
Ala	Ser														
	50														

<210> 298

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<223> where Xaa is any amino acid except Lys

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 Xaa Xaa Xaa Xaa Xaa Xaa Ala Xaa Xaa Ala Xaa Xaa Xaa Leu Xaa Xaa
 1 5 10 15
 Xaa Ala Thr Xaa Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile
 20 25 30
 Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys
 35 40 45
 Ala Ser
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 1 5 10 15
 Xaa Ala Thr Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Val Ile
 20 25 30
 Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys
 35 40 45
 Ala Ser
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 <210> 300

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 <223> where Xaa is any amino acid except Val

<220>
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<223> where Xaa is any amino acid except Val

<400> 300

Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Leu	Xaa	Xaa
1				5					10					15	
Xaa	Ala	Thr	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Val	Ile
			20					25					30		
Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe	Thr	Ser	Lys
		35					40					45			
Ala	Ser														
	50														